THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RICHARD L. MALLARD

Appeal No. 1997-4043
Application No. 08/124,332[1]

HEARD: January 13, 2000

Before KRASS, BARRETT, and BARRY, Administrative Patent Judges.

BARRY, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the final rejection of claims 1-12. We reverse.

[1] The application was filed on September 21, 1993.

BACKGROUND

The invention at issue in this appeal comprises a method of, and a cover plate used in, ultrasonic testing (UT). Immersion UT is a known technique for detecting internal flaws in machined parts or materials. A piece to be tested is immersed in a fluid, and an ultrasonic transducer sends ultrasonic waves through the fluid and into the part. The ultrasonic fluid enhances the coupling of ultrasonic waves to the piece. Voids, inclusions, cracks, or other defects in the piece reflect the ultrasonic waves passing through the component. The reflected ultrasonic waves are analyzed to detect such defects.

Immersion UT cannot be used to test materials that might react with an immersion fluid, thereby damaging the material. Specifically, targets used for semiconductor manufacturing often include a sputtering surface of a porous material such as tungsten, titanium, iron, terbium, cobalt or copper, which are likely to be damaged by immersion and thus rendered worthless.

The invention enables immersion UT to be used on pieces having surfaces that may be damaged by immersion. Initially, a cover plate is placed face-to-face with the processing surface of a piece. The perimeter of the processing surface is then sealed to the cover plate to form an acoustically reflective cavity therebetween. Because the perimeter of the cover plate is sealed to the processing surface, the component can be immersed for testing, without the processing surface contacting and being damaged by the immersion fluid. During testing, ultrasonic waves enter the component, are reflected from the acoustically reflective cavity, and are collected to generate an ultrasonic image of the component.

Claim 7, which is representative for our purposes, follows:

> 7. A cover plate for attachment to a processing component for protecting a processing surface thereof during immersion ultrasonic testing, comprising
>
> a front face,
>
> a back face, and

> a sealing rim at a perimeter of said cover plate for engaging said cover plate to said component with said front face opposite said processing surface,
>
> said cover establishing an acoustically reflective volume adjacent to said processing surface between said front face and said processing surface, said reflective volume reflecting ultrasonic waves entering said processing component and impinging on said processing surface from within said processing component.

The reference relied on in rejecting the claims follows:

C.E. Lautzenheiser et al. (Lautzenheiser), "Ultrasonic Inspection" pp. 161-163, 173-174, 181 and 387.

Claims 1-12 stand rejected under 35 U.S.C. § 103 as obvious over Lautzenheiser. Rather than repeat the arguments of the appellant or examiner in toto, we refer the reader to the briefs and answers for the respective details thereof.

OPINION

In reaching our decision in this appeal, we considered the subject matter on appeal and the rejection advanced by the examiner. Furthermore, we duly considered the arguments and evidence of the appellant and examiner. After considering

the totality of the record, we are persuaded that the examiner erred in rejecting claims 1-12. Accordingly, we reverse.

We begin by noting the following principles from In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993).

> In rejecting claims under 35 U.S.C. Section 103, the examiner bears the initial burden of presenting a prima facie case of obviousness. In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). Only if that burden is met, does the burden of coming forward with evidence or argument shift to the applicant. Id. "A prima facie case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art." In re Bell, 991 F.2d 781, 782, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993) (quoting In re Rinehart, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976)). If the examiner fails to establish a prima facie case, the rejection is improper and will be overturned. In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

With these in mind, we analyze the appellant's argument.

The appellant makes the following argument.

> The Examiner asserts that a person of ordinary skill would be motivated to maximize back reflections. Applicant submits ... that the opposite is clearly the case. Firstly, a person of ordinary skill, viewing Figs. 10 and 11 of "Ultrasonic

> Inspection", would recognize that couplant fluid which fills the area underneath the inspected object, had been chosen to minimize the acoustic reflection at the couplant/object boundary, rather than to maximize such reflections. Furthermore, a person of ordinary skill, viewing Fig. 10 and the accompanying text, would recognize that back reflections are typically eliminated from the display due to their large size and potential for generating confusion and error. Accordingly, a person of ordinary skill would view back reflections as something to be minimized in order to improve imaging, rather than maximized as the Examiner has asserted.
>
> Of course, absent a motivation to maximize back reflection, there is no motivation to form a gas bubble against the back surface of the tested object, and thus no motivation to form a seal with a perimeter of the inspected object so as to prevent the immersion fluid from invading this area, and thus, nothing leading to the "sealing rim" or “sealing" step recited in the present claims. (Reply Br. at 8.)

The examiner’s reply follows.

> [T]he issue at hand is ... the object/reflective material boundary that the ultrasonic waves come into contact with after already passing through the object to be tested. Thus, by maximizing the reflection of the ultrasonic waves after passing through the test object, the test object can be "tested" again since the ultrasonic waves must travel through the object for a second time. (Supplemental Examiner’s Answer at 4.)

We agree with the appellants.

Claims 1-6 each specifies in pertinent part the following limitations: “sealing a perimeter of said processing surface to said plate to form an acoustically reflective volume therebetween ....” Similarly, claims 7-12 each specifies in pertinent part the following limitations: “a sealing rim at a perimeter of said cover plate for engaging said cover plate to said component with said front face opposite said processing surface ... establishing an acoustically reflective volume adjacent to said processing surface between said front face and said processing surface ....” In summary, the limitations recite sealing the perimeter of a processing surface to a cover plate to form an acoustically reflective cavity therebetween.

The examiner fails to show a teaching or suggestion of these limitations in the prior art. “Obviousness may not be established using hindsight or in view of the teachings or suggestions of the inventor.” Para-Ordnance Mfg. v. SGS Importers Int’l, 73 F.3d 1085, 1087, 37 USPQ2d 1237, 1239 (Fed. Cir. 1995) (citing W.L. Gore & Assocs., Inc. v. Garlock, Inc., 721 F.2d 1540, 1551, 1553, 220 USPQ 303, 311, 312-13

(Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984)). The mere fact that prior art may be modified as proposed by an examiner does not make the modification obvious unless the prior art suggested the desirability thereof. In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992); In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984).

Here, the examiner admits that Lautzenheiser fails "to explicitly teach the sealing of a perimeter of said processing surface in order to form an acoustically reflective volume therebetween ...." (Examiner's Answer at 4.) The admission, albeit correct, is an understatement. Although the reference shows positioning a "test piece" on two triangular objects, Fig. 10, the examiner has not identified anything in Lautzenheiser that would have suggested sealing the test piece to the objects. Neither has he provided any evidence to support his allegation that such sealing would have permitted the test piece to be "'tested' again," (Examiner's Answer at 4), or that such testing (again) would have been desirable. In addition, the examiner has not contested the appellant's

assertion that "a person of ordinary skill would view back reflections as something to be minimized in order to improve imaging, rather than maximized," (Reply Br. at 8),[2] which militates against the modification proposed by the examiner. In view of these omissions, the examiner's allegation amount to impermissible reliance on the appellant's teachings or suggestions.

For the foregoing reasons, we are not persuaded that the prior art would have suggested sealing the perimeter of a processing surface to a cover plate to form an acoustically reflective cavity therebetween as claimed. The examiner has not established a prima facie case of obviousness. Therefore, we reverse the rejection of claims 1-12 under 35 U.S.C. § 103.

CONCLUSION

[2] To the contrary, the "Examiner agrees with Applicant's desire to minimize ultrasonic reflection at a couplant/object boundary ...." (Supplemental Examiner's Answer at 4.)

To summarize, the examiner's rejection of claims 1-12 under 35 U.S.C. § 103 is reversed.

REVERSED

ERROL A. KRASS Administrative Patent Judge	)
LEE E. BARRETT Administrative Patent Judge	) BOARD OF PATENT APPEALS AND INTERFERENCES
LANCE LEONARD BARRY Administrative Patent Judge	)

LLB/kis

WOOD, HERRON & EVANS
2700 CAREW TOWER
CINCINNATI, OH 45202